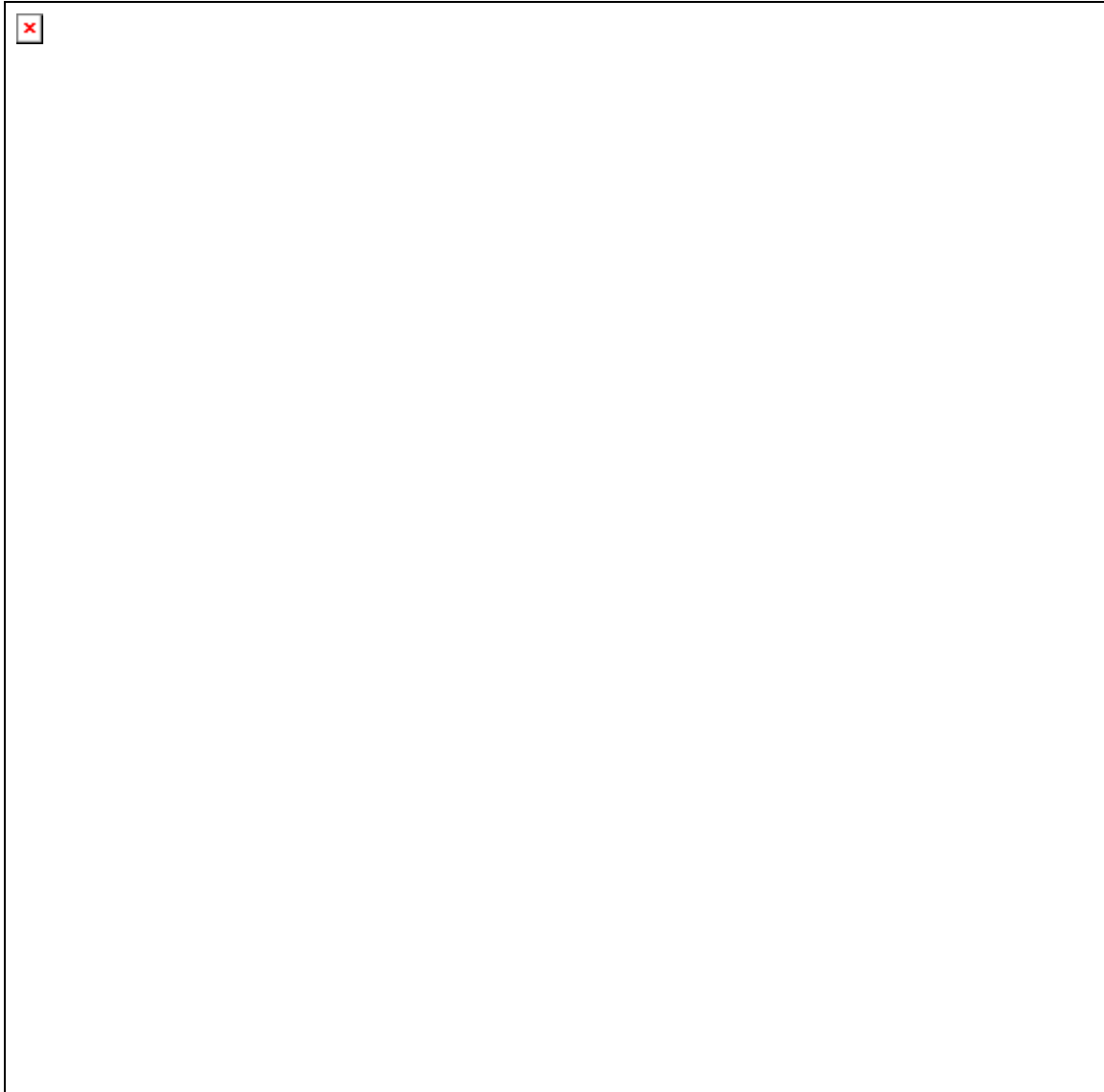


## Appendix E

### **Shrink-swell Soil Map of Montgomery County** ***Map courtesy of Montgomery County Planning***

*Note: This map is generalized, but Montgomery County is seeking more detailed information.*



## Appendix F

### Risk Assessment Methodology

#### Flooding Risk Assessment

For the flooding risk assessment, I first compared tax parcel maps, (available online at: [www.webgis.net](http://www.webgis.net) and [www.montva.com/departments/bos/reassessment/index\\_new.php](http://www.montva.com/departments/bos/reassessment/index_new.php)) with FEMA flood insurance maps, (available at: <http://store.msc.fema.gov>) to *locate the parcels* that are within the 100-year and 500-year flood plain area. This was completed either through direct use of Internet-based geographic information system (GIS) technologies or by comparing paper flood maps with parcel maps.

I used parcel as a research object because of two reasons. First, it is suitable on regional level in terms of scale and resolution. Second, it is better for emphasis in this case since it may prevent further construction in the flood plain area.

Then I tried to gather *value information*. For property value and use value assessment information, I used various methods, depending on the availability of necessary data. For critical areas in Montgomery County, Town of Blacksburg, and Town of Christiansburg, I used reassessment data (available online at [www.montva.com/departments/bos/reassessment/index\\_new.php](http://www.montva.com/departments/bos/reassessment/index_new.php)). For other jurisdictions, I used value information (land value, improvement value & use value) available at Anderson & Associates<sup>1</sup> GIS website ([www.webgis.net](http://www.webgis.net)) as a base for information. In their web-GIS system, there is also structure value and owner information linked with tax parcel information.

For each of the jurisdictions, I set up an EXCEL *dataset* of assessment information. Below is an example data set, from the Town of Blacksburg.

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<sup>1</sup> Anderson & Associates, Inc. is a progressive employee-owned company based in Blacksburg, Virginia.

Parcel ID	Map #	owner name	acreage	land value	building value	% in 100yr	% in 500yr	value at risk	TOTAL
000369	136-T A 1	FARMINGDALE ALLEN FAMILY	15.824	\$31,600		60		\$18,969	\$31,600
000543	194- A 17	FARM LLC GRADY CARL W & JULIE R	146.21	\$637,400	\$177,800	10		\$63,755	\$815,200
001267	164- A 20	GRADY	9.397	\$58,900	\$183,300	80	10	\$53,018	\$242,200
001761	222- 2 2	BISHOP LUCY M	0.62	\$2,800		50	10	\$1,680	\$2,800
001762	222- 2 1	BISHOP LUCY M BLACKSBURG	2.029	\$46,900	\$109,700	10	5	\$7,035	\$156,600
002563	223- A 17	TOWN OF	168.581	\$832,200		20	5	\$208,092	\$832,200

Please note that the item, **% in 100yr** and **% in 500yr** is by visual estimation of the parcel area that is within the flood plain area. This quantitative visual estimation is rough and subject to error. The item **value at risk** is calculated by the formula: Total value x (% in 100yr + % in 500yr);

Finally, I produced risk assessment *maps* for the jurisdictions. In the example of the Risk Assessment Map of the Town of Blacksburg shown below, colored areas are the parcels that are either all or partially in the flood prone area. Different colors show different rates of *total value* per acre, from less than \$5,000 per acre to more than \$50,000 per acre of total value. Total value is used in making the maps for the sake of emphasis.

I conducted similar flood risk assessment studies for the following jurisdictions and areas:

- Town of Blacksburg,
- Town of Christiansburg,
- Town of Narrows,
- Town of Glen Lyn,
- Town of Rich Creek,
- Town of Pearisburg,
- Plum Creek area in Montgomery County,
- South Fork Roanoke River area in Montgomery County,
- Little Walker Creek area in Pulaski County,
- Big Reed Island Creek area in Pulaski County.